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10/821,788	04/09/2004	Martin Edelmann	3081.66US01	9349

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EXAMINER

HARRINGTON, ALICIA M

ART UNIT PAPER NUMBER

2873

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/821,788

Applicant(s)

EDELMANN, MARTIN

Examiner

Alicia M. Harrington

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0404.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The Examiner has considered the information disclosure statement filed on 4/9/04.

### ***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because the abstract contains claim language (for example comprising). Correction is required. See MPEP § 608.01(b).
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites “the line grating only serves the purpose of beam deflection and also an imaging optical element”. The claim contradicts itself because the grating can’t have a single purpose in the beginning of the claim and then have two purposes in the remainder to the claim. Thus, claim 6 is indefinite.

Claims 6-7 will be examined as best understood by the Examiner.

Claim 7 inherits its indefiniteness from claim 6 for which it depends.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3,13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Popovich (US 2001/0024177).

Regarding claim 1, Popovich discloses an image-generating unit for generating a polychromatic image (see sections 15-17,20 and 22) and deflection optics comprising first (14 or 16) and second (14 or 16) partial optics, said deflection optics (see sections 27-28) projecting the image such that it is perceivable by a user wearing said HMD device, wherein the two partial optics each contain a diffractive optical unit for beam deflection, which are desired such that their dispersion errors compensate each other (see sections 33 and figure 1).

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Regarding claim 2, Popovich discloses the HMD device as claimed in Claim 1, wherein use is made of a non-zeroth order of diffraction of the diffractive optical units for beam deflection (see sections 22 and 27).

Regarding claim 3, Popovich discloses the HMD device as claimed in Claim 2, wherein the same order of diffraction is used for both diffractive optical units (see sections 22 and 27).

Regarding claim 13, Popovich discloses the HMD device as claimed in Claim 1, wherein the second partial optics (for example 14) arranged in front of the eye of a user wearing the HMD device are provided so as to allow the user to perceive his environment through said optics (see sections 22,35,36).

Regarding claim 14, Popovich discloses the HMD device as claimed in Claim 13, wherein the user can see through the diffractive optical unit of the second partial optics in the zeroth order of diffraction (see sections 22,35,36).

9. Claims 1, 4-6,8-12, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts (US 5,396,349).

Regarding claim 1, Roberts discloses an image-generating unit for generating a polychromatic image (see col. 2, lines 60-67) and deflection optics comprising first (5,7 or 1) and second (1 or 5,7) partial optics, said deflection optics (see col. 3, lines 3-60) projecting the image such that it is perceivable by a user wearing said HMD device, wherein the two partial optics each contain a diffractive optical unit for beam deflection, which are desired such that their dispersion errors compensate each other (see col. 4, lines 10-18).

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Regarding claim 4, Roberts discloses the HMD device as claimed in Claim 1, wherein the diffractive optical unit of at least one of the first and second partial optics (for example 5,7 or 1-closes loop line -circle) is provided as a line grating (see col. 3,lines 50-60).

Regarding claim 5, Roberts discloses the HMD device as claimed in Claim 4, wherein the line grating serves the purpose of beam deflection (see figure 2 for example).

Regarding claim 6, Roberts discloses the HMD device as claimed in Claim 4, wherein the line grating serves the purpose of beam deflection and also as an imaging optical element (see for example figure 2 and col. 3).

Regarding claim 8, Roberts discloses the device as claimed in Claim 4, wherein the line grating is formed on or in a curved material interface (for example 1; see col. 3,lines 50-60; col. 4, lines 20-30).

Regarding claim 9, Robert discloses the HMD device as claimed in Claim 8, wherein the material interface is spherically curved (see figure 1 for example).

Regarding claim 10, Robert discloses the HMD device as claimed in Claim 9, wherein said deflection optics comprise a refractive element having a first and a second side, said first side being said spherically curved material interface (see visor 1 in figure 1 for example).

Regarding claim 11, Robert discloses the HMD device as claimed in Claim 10, wherein said line grating formed on or in said spherically curved material interface is adapted to provide a desired aspherical effect. The curved surface is designed to bend/refract/deflect light to the user eye and thus provides an image display at infinity superimposed on an outside scene using the gratings.

Regarding claim 12, Robert discloses the HMD device as claimed in Claim 4, wherein the line grating is formed on or in a planar material interface (for example see col. 3,lines 50-55).

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Regarding claim 15, Robert discloses the HMD device as claimed in Claim 1, wherein the second partial optics (for example 5,7) have a refractive effect for correction of visual deficiencies of the user wearing the HMD device (see col. 4, lines 9-15).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US 5,396,349).

Regarding claim 7, Roberts discloses the HMD device as claimed in claim 6, wherein Robert discloses the line spacing need not necessarily be constant (see col. 3, lines 50-65). However, Robert fails to specifically disclose the grating constant of the line grating varies with respect to the imaging effect. Although, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a variable grating constant, since it is known that variable gratings produce different light diffractive effects based on the wavelength of light impinging and Roberts system is a polychromatic light system; thus, the system can produce focused light for the images resulting from multiple wavelengths of light when the constant is variable (i.e. improves transmission and deflection of light in accordance with its wavelength which provide a improved color image to the user).

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***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuwayama et al (US 5,379,132) discloses a display apparatus for a head up display system;

Taniguchi et al (US 5,162,928) discloses a head up display apparatus; and

Kuwayama et al (US 5,363,220) discloses a diffraction device.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571 272 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AMH

Alicia M Harrington  
Examiner  
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